

STUDY OF CYTOLOGY IN INTRAUTERINE DEVICE COPPER-T USERS

by

KAMAL K. DESHMUKH

A. A. PANDIT

and

K. M. ALGOTAR

SUMMARY

Cytology smears of 160 women using Cu-T were studied at the time of removal and compared with the non-users of same age group.

There was no difference in incidence of dysplasia in both the groups. However, an incidence of inflammation was higher in Cu-T users.

Atypical smears which require follow-up are only associated with Cu-T users and hence cytological monitoring must be done in all the cases.

Introduction

Intrauterine contraceptive device (I.U.D.) is acceptable as one of the reversible, effective and economical methods of contraception. The non-carcinogenic property of polyethylene I.U.D. is disputed. Copper-T causes fewer side effects than Lippes loop and its contraceptive effect is almost 5 times greater than Lippes loop (Tatum, 1972). Thus, superiority of Copper has been well established (Lieduolm, 1974; Affandi and Virker, 1976; Deshmukh, 1977; Alwani, 1978). No abnormal cytomorphological changes have been reported due to the use of Copper-T device (Affandi, 1976; Misra

et al, 1976; Luthra *et al*, 1978). However few workers reported high incidence of suspicious smears (Ayre, 1965). The present study was undertaken to ascertain the safety of Copper-T device with reference to dysplasia and malignancy.

Material and Methods

Material comprised of 160 women attending for I.U.D. removal at Family Welfare Centre attached to Sir J.J. Group of hospitals, Bombay, during March 1980 to April 1981. After taking complete history, the women were examined clinically and smears were collected from posterior fornix of vagina, cervix (ectocervix as well as endocervix) and from Copper-T itself. The findings were compared with the non-users of Copper-T of the same age group.

From: Depts. of Obstetrics and Gynaecology and Pathology, Grant Medical College, Bombay-400 008.

Accepted for publication on 20-10-83.

Observations

The youngest women of the series was 19 years of age, while the oldest one aged 40 years. The largest number of cases (73.6%) belonged to the age group 20 to 30 years. In 87 women I.U.D. was inserted post MTP, while 21 insertions were postpartum within 3 months. Only 2 insertions were post abortal and 50 insertions were postmenstrual. The reasons for removal of Copper-T were as follows. Seventy-eight cases wanted to plan pregnancy, 30 came for replacement of Copper-T, 3 adopted permanent method of contraception, 18 had menorrhagia and 31 removals were for non-medical reasons.

Table I shows the findings of cytology smears. The cytology smears were classified as normal, when there were no cytomorphological changes in the epithelial cells and the background was clean. Inflammatory smears showed more than 50 inflammatory cells per low power field. Dysplastic cells were subdivided into mild, moderate and severe types depending on the severity of nuclear changes. Few smears were classified as atypical when they showed large isolated cells with peripheral hyperchromatic nucleus and abundant vacuolated cytoplasm (Fig. 1). The vaginal smears corresponded to

the cyclic hormonal status of the women. Out of 160 smears, 2 (1.3%) smears were inadequate, 60 (43.12%) were normal and 89 (55.6%) were inflammatory. Only 8 inflammatory smears showed presence of *Trichomonas vaginalis* and 1 smear showed evidence of tuberculosis.

Among the cervical smears, 2 (1.3%) were inadequate and 64 (40%) were normal. 89 (55.6%) smears showed presence of dense inflammatory exudate. *Trichomonas vaginalis* was seen in 8 smears. Evidence of dysplasia was seen in 5 (3.1%) cases (2 mild and 3 moderate). Changes of carcinoma in situ or frank malignancy were not observed in any of the smears.

The most interesting finding was observed in the smears collected directly from Copper-T device after removal. In 4 smears, large round to oval cells were seen. They were single, showed abundant vacuolated cytoplasm and an eccentric, large hyperchromatic nucleus. Chromatine clumping and multiple round nucleoli were seen. These smears were classified as 'Atypical Smears'.

All other smears showed dense inflammatory exudate, red blood cells and macrophages. Foreign body type of giant cells were seen in 2 smears only. These were large cells, with 15-20 nuclei and abundant pink cytoplasm.

TABLE I
Cytology Findings

Smears	No. of cases	Percentage
Negative	60	37.5
Inadequate	2	1.3
Inflammatory	89	55.6
Atypical	4	2.5
Dysplasia	5	3.1
	(2 mild + 3 moderate)	

The duration of Copper-T device and cytology findings are shown in Table II. The maximum duration was 72 months and the minimum duration was 2 months. There was no correlation between the duration of Copper-T and the cytological findings. In the study 'Atypical' smears were in 4 cases. Out of them 1 was after one year of use, 1 after 3 years of use and 2 were after more than 3 years of use.

TABLE II
Cytology Findings in Relation to Duration of I.U.D.

Duration of I.U.D.	Total No. of cases	Negative smears	Inflammatory	Inadequate	Atypical	Mild dysp.	Moderate dysp.
Upto 1 yr	27	10 (37%)	15 (55.55%)	—	1 (3.7%)	—	1 (3.7%)
Upto 2 yrs.	41	10 (24.31%)	29 (70.73%)	1 (2.43%)	—	—	1 (2.43%)
Upto 3 yrs.	53	26 (50.00%)	22 (41.50%)	1 (1.8%)	1 (1.9%)	1 (1.9%)	1 (1.9%)
More than 3 yrs.	39	14 (35.89%)	23 (58.97%)	—	2 (5.0%)	1 (2.5%)	—
Total	160	60	89	2	4	2	3

The cytological findings in Copper-T users and non-users of the same age group is compared in Table III. Atypical smears were seen only in Copper-T users and not in non-users.

Discussion

In our series, majority of the cases belonged to the age group 20 to 30 years. When cytological findings of Copper-T users and non-users of the same age group were compared, it was noticed that the incidence of inflammation was more in Copper-T users (55.6%) comparing to non-users (40.0%). This can be explained by the fact that I.U.D. being a foreign body, induces inflammatory reaction (Rubenstein, 1974; Misra *et al*, 1976; Sagiroglu and Sagiroglu, 1970).

In the present study, direct contact smears collected from Copper-T after removal were studied in addition to the usual cytological smears. Those direct contact smears were showing atypical cells. About this direct contact smears Abrams (1966), studied 50 cases of I.U.D. i.e. spritzer nylon modification. Cellular atypia was found in 5 out of 50 cases. These patients were treated with progesterone preparation and atypia disappeared in the follow-up smears. The atypical cells which were observed in 4 cases, were also studied by Fornari (1974). Five hysterectomy specimen were studied showing minute areas of congestion, haemorrhage and increased mucus production. These atypical cells found in the smears, were thought to be exfoliated from such areas. Recently, Gupta (1982) also reported the presence of these atypical cells in I.U.D. users. He studied the follow-up smears varying from 12 to 60 months, obtained from 100 women using the I.U.D. and whose preinsertion smears were negative for cancer. It has been

TABLE III
Comparison of Cytology in Cu-T Users and Non-users of Same Age Group

Smears	Cu-T users		Non-users	
	Number	Percentage	Number	Percentage
Negative	60	37.5	83	51.87
Inflammation	89	55.6	64	40.00
Inadequate	2	1.25	8	5.00
Mild dysplasia	2	1.25	2	1.25
Moderate dysplasia	3	1.87	2	1.25
Severe dysplasia —	—	—	1	0.62
Atypical	4	2.5	—	0.00

reported that the exact origin of these cells is not known. Some of them perhaps arise from the endometrium and could also be histiocytic, endometrial, stromal or metaplastic. Thus the use of an I.U.D. may result in the exfoliation of these 'atypical cells' that can mimic serious epithelial neoplastic lesions and awareness of these I.U.D. associated cytomorphological alterations can help in the management of I.U.D. acceptors.

Moyer and Mishell (1971) studied endometrial aspirations in I.U.D. cases and concluded that there is no evidence of increased incidence of either benign or malignant endometrial neoplasm. Other studies also showed similar findings (Ishihama *et al*)

In present study there were 5 cervical smears showing dysplastic changes (2 mild and 3 moderate). There was no smear showing severe dysplasia, carcinoma in situ or invasive malignancy. The incidence of dysplasia was same in Copper-T users and non-users. Other workers have also reported that there are no significant cytological changes in cervical epithelium after the use of Copper-T (Luthra *et al*, 1978; Affandi, 1976;

Tatum, 1972; Hegenfeldt, 1972; Misra *et al*, 1976).

Acknowledgement

We are thankful to Dr. S. G. Deodhare, Dean, Grant Medical College, Bombay, for his kind permission to report the hospital records.

References

1. Abrams, R. Y.: Acta. Cytologica. 10: 240, 1966.
2. Affandi, M. Z. and Virkar, K. D.: Contraception. 13: 739, 1976.
3. Alwani, C., Madulkar, A., Krishna, U. and Purandare, V. N.: J. Obstet. Gynaec. India. 28: 626, 1978.
4. Ayre, J. E.: Indust. Med. Surg. 34: 394, 1965.
5. Deshmukh, K. K., Mujumdar, S. B. and Sankholkar, P. C.: J. Obstet. Gynaec. India. 27: 672, 1977.
6. Engineer, A. D.: Ind. J. Med. Res. 64: 1255, 1976.
7. Fornari, J. D.: Acta. Cytol. 18: 341, 1974.
8. Gupta, P. K.: Acta. Cytol. 26: 571, 1982.
9. Hegenfeldt, K.: Contraception. 6: 207, 1972.
10. Ishihama, A., Kagabu, T., Imai, T. and Shima, M.: Acta. Cytol. 14: 35, 1970.
11. Lieduolm, P. and Nils-otto Sjoberg: Contraception. 10: 55, 1974.
12. Luthra, U. K., Mitra, A. B. and Prabhar-

kar, A. K.: Indian. J. Med. Research. 68: 78, 1978.

13. Misra, J. S., Engineer, A. D. and Tandon, P.: Souvenir, Indian Academy of Cyto- logists, 6th Annual Meeting, Oct. 1976. Page 32.

14. Moyer, D. C. and Mishell, D.: Am. J. Obstet. Gynaec. 111: 66, 1971.

15. Pincus, G. and Garcia, C. R.: Metabolism. 14: 344, 1965.

16. Rubeinstein, E.: Contraception. 10: 673, 1974.

17. Sagiroglu, N. and Sagiroglu, E.: Acta. Cytol. 14: 58, 1970.

18. Tatum, H. J.: Contraceptions. 6: 179, 1972.

19. W.H.O. Intrauterine devices: Physiologi- cal and clinical aspects. Technical Report Series, 397, Geneva, WHO, 1968.

See Fig. on Art Paper IV